

WHAT IS CLAIMED IS:

1. A treatment system comprising:

a magnetic resonance diagnostic apparatus for obtaining tomographic images of living-body tissue of the patients using electromagnetic waves;

an energy-emission therapeutic instrument, which is installed along with the magnetic resonance diagnostic apparatus, for performing treatment of an affected portion of the patient using treatment energy;

an antenna, which is installed along with the energy-emission therapeutic instrument and the magnetic resonance diagnostic apparatus, for receiving electromagnetic waves which are repeatedly output at the time of taking tomographic images of living-body tissue by the magnetic resonance diagnostic apparatus;

a treatment power supply unit for generating treatment energy and outputting the generated treatment energy to the energy-emission therapeutic instrument based upon on/off control signals input from a switch, or detected results whether or not the electromagnetic waves received by the antenna contain electromagnetic waves output from the magnetic resonance diagnostic apparatus; and

an energy transmission cable for transmitting the treatment energy generated by and output from the treatment

power supply unit to the energy-emission therapeutic instrument.

2. The treatment system according to Claim 1, wherein the treatment power supply unit comprises:

an output unit for generating and outputting treatment energy;

a signal detection unit for detecting information whether or not signals received by the antenna contain any electromagnetic waves output from the magnetic resonance diagnostic apparatus, and for outputting pulse-detection information upon detecting electromagnetic waves output from the magnetic resonance diagnostic apparatus; and

a control unit for receiving the on/off control signals output from the switch, or the pulse-detection information output from the signal detection unit, and performing predetermined control for the output unit for outputting treatment energy to the energy-emission therapeutic instrument.

3. The treatment system according to Claim 2, wherein the signal detection unit comprises:

a filter circuit which allows, of signals with various frequencies received by the antenna, only electromagnetic waves with a predetermined frequency range corresponding to

the electromagnetic waves output from the magnetic resonance diagnostic apparatus to pass through; and

a detection circuit for outputting the pulse-detection information to the control unit upon determining that the signals with frequency components which have passed through the filter circuit have been output from the magnetic resonance diagnostic apparatus.

4. The treatment system according to Claim 3, wherein in the event that the control unit receives pulse-detection information output from the detection circuit of the signal detection unit, the control unit performs switching to the state wherein treatment energy output from the output unit to the energy-emission therapeutic instrument is prohibit or reduced regardless of on/off control signals output from the switch,

and wherein on the other hand, in the event that the control unit receives no pulse-detection information output from the detection circuit of the signal detection unit, the control unit performs switching to the state wherein treatment energy output from the output unit to the energy-emission therapeutic instrument is prohibit or reduced according to on/off control signals output from the switch.

5. The treatment system according to Claim 1, wherein

the magnetic resonance diagnostic apparatus, and the antenna and the energy-emission therapeutic instrument forming the energy-emission treatment apparatus, are installed within a shield room, and the treatment power supply unit of the energy-emission treatment apparatus is installed outside of the shield room.

6. The treatment system according to Claim 1, wherein the energy-emission treatment apparatus comprises:

an energy-emission therapeutic instrument, which is installed along with the magnetic resonance diagnostic apparatus, for performing treatment of an affected portion of the patient using treatment energy;

an antenna, which is installed along with the energy-emission therapeutic instrument and the magnetic resonance diagnostic apparatus, for receiving electromagnetic waves repeatedly output by the magnetic resonance diagnostic apparatus during acquisition of tomographic images of living-body tissue;

a treatment power supply unit for outputting treatment energy to the energy-emission therapeutic instrument;

an output control device for generating driving signals which instruct the treatment power supply unit so as to output treatment energy toward the energy-emission therapeutic instrument, or non-driving signals which

instruct the treatment power supply unit so as to prohibit or reduce output of treatment energy, based upon on/off control signals received from the switch or detection results obtained by the antenna whether or not any electromagnetic waves have been output from the magnetic resonance diagnostic apparatus;

an energy transmission cable for transmitting the treatment energy generated by and output from the treatment power supply unit to the energy-emission therapeutic instrument; and

a signal line for transmitting driving signals or non-driving signals generated by the output control device to the treatment power supply unit.

7. The treatment system according to Claim 6, wherein the treatment power supply unit includes: an output unit for generating and outputting treatment energy; and a control unit, which is connected to the output control device through the signal line, for controlling switching between the state wherein treatment energy is output from the output unit to the energy-emission therapeutic instrument, and the state wherein output thereof is prohibited or reduced, according to driving signals or non-driving signals output from the output control device,

and wherein the output control device includes a signal

detection unit for receiving various frequencies of signals obtained by the antenna, detecting electromagnetic waves output from the magnetic resonance diagnostic apparatus, and outputting pulse-detection information at the time of detecting electromagnetic waves output from the magnetic resonance diagnostic apparatus; and a signal generating unit, which is connected to the switch as well as being connected to the signal detection unit, for outputting driving signals serving as control signals which instruct the output unit so as to output treatment energy to the energy-emission therapeutic instrument, or non-driving signals serving as control signals which instructs the output unit so as to prohibit or reduce the output thereof, to the control unit of the treatment power supply unit.

8. The treatment system according to Claim 1, further comprising a relay unit disposed at a predetermined position on the energy transmission cable, wherein the relay unit comprises:

a pair of contacts each of which are connected to the end of the energy transmission cable;

an armature for performing switching of these contacts between the connected state and the non-connected state,

and wherein the relay unit enters the non-connected state at the time of the antenna detecting electromagnetic

waves output from the magnetic resonance diagnostic apparatus.

9. The treatment system according to Claim 2, wherein in the event that the signal detection unit has detected any pulse-detection information, the control unit controls the output unit so as to prohibit or reduce output of treatment energy toward the energy-emission therapeutic instrument,

and wherein on the other hand, in the event that the signal detection unit has detected no pulse-detection information, i.e., in the event that no electromagnetic wave have been detected, the control unit controls switching of the output unit between the state wherein treatment energy is output from the output unit to the energy-emission tool, and the state wherein output of treatment energy is prohibited or reduced, according to on/off control signals output from the switch.

10. The treatment system according to Claim 1, wherein the energy-emission treatment apparatus further includes: a relay distance selecting unit for setting the relay distance between the energy-emission therapeutic instrument and the treatment power supply unit; and a correction unit for correcting at least treatment energy which is to be output from the treatment power supply unit based upon the distance

set by the relay distance selecting unit.

11. The treatment system according to Claim 1, wherein the energy-emission treatment apparatus further includes a connector which has a distance identifier therewithin for identifying the relay distance of the cable, for being connected to the treatment power supply unit, the connector being included in at least the energy transmission cable.

12. The treatment system according to Claim 11, wherein the treatment power supply unit includes a relay distance determining unit for determining the distance identified by the distance identifier contained within the connector.

13. The treatment system according to Claim 12, wherein the relay distance determining unit determines the relay distance of the cable based upon the resistance value of the distance identifier, and outputs the determination results to the correction unit,

and wherein the correction unit corrects at least treatment energy which is to be output from the treatment power supply unit.